BTEC Assignment Brief

Qualification	Pearson BTEC Level 3 National Extended Diploma in Manufacturing Engineering (1080 GLH) 601/7589/8 Pearson BTEC Level 3 National Extended Diploma in Aeronautical Engineering (1080 GLH) 601/7585/0 Pearson BTEC Level 3 National Extended Diploma in Engineering (1080 GLH) 601/7588/6 Pearson BTEC Level 3 National Diploma in Engineering (720 GLH) 601/7580/1 Pearson BTEC Level 3 National Diploma in Manufacturing Engineering (720 GLH) 601/7582/5 Pearson BTEC Level 3 National Diploma in Aeronautical Engineering (720 GLH) 601/7577/1
Unit number and title	Unit 47 – Composites Manufacture and Repair Processes
Learning aim(s)	**A:** Examine the characteristics and applications of fibre-reinforced polymer composites that are widely used in industry.
Assignment title	The characteristics and applications of fibre-reinforced polymer composites.
Assessor	
Hand out date	
Hand in deadline	

Vocational Scenario or Context	***[Delete all italic red text before issue to the learners]*** The benefits of using composite materials over traditional materials has become increasingly apparent in many engineering applications. This has led to them being used more frequently in different engineering sectors including automotive to aerospace and power generation. You are working as a trainee engineer in *[insert company name]* which has been tasked by two different companies to investigate the suitability of using composite materials in two traditional applications. The first company is replacing an oak footbridge on a bridleway that is suffering from rot. The second company is manufacturing bicycles and wants to replace the aluminium material used to make the frames. *[Ideally different learners should consider different materials and/or applications].* Your line manager has asked you to look at both of these applications and suggest suitable **fibre-reinforced polymer (FRP) composite materials** for each one.
Task 1	You are to produce an accurate technical report that justifies the use of suitable fibre-reinforced polymer (FRP) composites for each application given above. Your report must include: • the mechanical properties of the materials that are currently being used in each application. • the characteristics (including types, properties, curing, qualities and other important characteristics) of at least

	two suitable FRP composites for each application. • the processing parameters e.g. fibre orientation and the fibre/resin matrix ratio that influence the structure and mechanical properties of at least **two** suitable FRP composites for each application. • a review of the suitability of two or more alternative FRP composites selected for each application and against the current materials being used.
Checklist of evidence required	Illustrated and referenced written report
Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
A.D1	Justify, using language that is technically correct and of a high standard, the application of at least two different FRP composite materials.
A.M1	Compare the characteristics and applications of at least two different FRP composite materials.
A.P1	Explain the characteristics and applications of at least two different FRP composite materials.